



US006314103B1

(12) **United States Patent**
Medhat et al.

(10) Patent No.: **US 6,314,103 B1**
(45) Date of Patent: **Nov. 6, 2001**

(54) **SYSTEM AND METHOD FOR ALLOCATING BANDWIDTH FOR A CALL**

(75) Inventors: **Khalid Mohamed Medhat; Michael Joseph Gardner**, both of Overland Park, KS (US); **Dean Charles Boldt**, Parkville, MO (US)

(73) Assignee: **Sprint Communications Company, L.P.**, Kansas City, MO (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/027,416**

(22) Filed: **Feb. 20, 1998**

Related U.S. Application Data

(63) Continuation-in-part of application No. 08/594,660, filed on Feb. 2, 1996, now Pat. No. 6,081,525, which is a continuation-in-part of application No. 08/568,551, filed on Dec. 7, 1995, now Pat. No. 5,825,780, and a continuation-in-part of application No. 08/525,897, filed on Sep. 8, 1995, now Pat. No. 5,991,301, which is a continuation-in-part of application No. 08/238,605, filed on May 5, 1994, now abandoned, application No. 09/027,416, which is a continuation-in-part of application No. 08/568,551, filed on Dec. 7, 1995, and a continuation-in-part of application No. 08/525,050, filed on Sep. 8, 1995, now Pat. No. 6,181,703, which is a continuation-in-part of application No. 08/238,605, filed on May 5, 1994.

(51) Int. Cl.⁷ **H04L 12/28; H04L 12/56**

(52) U.S. Cl. **370/395; 370/468**

(58) Field of Search **370/395, 396, 370/397, 398, 399, 465, 468, 400, 401, 409**

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,201,889 5/1980 Lawrence et al. .
4,310,727 1/1982 Lawser .
4,348,554 9/1982 Asmuth .
4,453,247 6/1984 Suzuki et al. .

(List continued on next page.)

FOREIGN PATENT DOCUMENTS

90312739 7/1991 (EP) .

91303312 10/1991 (EP) .

(List continued on next page.)

OTHER PUBLICATIONS

Yoshikai, N., et al., "Report of the Meeting of SWP 13/1-4 (Draft Recommendation I.580)," ITU-T Telecommunication Standardization Sector, Study Group 13, pp. 1-51, (Mar. 7-18, 1994).

N/A, "Final Draft Text for Broadband Capability Set 2 Signaling Requirements, Attachment "D" Special Drafting Meeting," ITU-T Telecommunications Standardization Sector, Study Group 11, p. 1-127, (Sep. 13-22, 1993).

(List continued on next page.)

Primary Examiner—Ricky Ngo

(74) *Attorney, Agent, or Firm*—Harley R. Ball; Steven J. Funk

(57) **ABSTRACT**

A system and method for allocating bandwidth in an asynchronous transfer mode (ATM) system under-allocates bandwidth in virtual paths for virtual path groups between ATM devices. A bandwidth allocation platform manages the virtual paths in the ATM system to control allocation and to prevent congestion, while providing efficient utilization of the bandwidth within the ATM system. The bandwidth allocation system under-allocates virtual paths for virtual path groups that require additional bandwidth to make connections for calls. When a connection is selected on the under-allocated virtual path, the virtual path may use bandwidth from another virtual path in the virtual path group or from a virtual path in another virtual path group if needed. A communication device transports user communications and call signaling for a call. A signaling processor processes the call signaling to select a connection in one of the under-allocated virtual paths for the call over the virtual path group. An interworking unit interworks the user communications from the format in which the user communications are received from the communication device to asynchronous transfer mode cells that identify the selected connection.

104 Claims, 10 Drawing Sheets

